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EXAMINER

KOVACEK, DAVID M

ART UNIT

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2626

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/697,909	Applicant(s) SUNG ET AL.	
	Examiner DAVID KOVACEK	Art Unit 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action is in response to the applicant's Request for Continued Examination, filed 02/21/2008, in which the applicant presents amendments to **claims 1, 8 and 9** and also provides arguments regarding patentability over the previously cited prior art.

Response to Amendment

2. The amendments to **claims 8 and 9** have been considered and are accepted. It is noted by the examiner that formal acceptance of the claims is not an indication of allowance over the prior art. Appropriate rejections are included below in the relevant sections of this Office Action.

Response to Arguments

3. Applicant's arguments with respect to **claims 1-2, 4-5, and 8-9** have been considered but are moot in view of the new ground(s) of rejection. It is noted by the examiner that the new grounds of rejection were necessitated by the amendment of the applicant. The appropriate rejections are included below in the relevant sections of this Office Action.

4. Applicant's arguments regarding **claims 3 and 6**, filed 02/21/2008 have been fully considered but they are not persuasive.

Specifically regarding **claim 3**, the applicant argues that the cited reference of Arslan (US Patent 6,615,174) [does] not teach or suggest **the recited conditions when the formant bandwidth should be compressed** [emphasis in original] (that is, when the bandwidth of the input CELP format is wider than that of the output CELP format). It is further noted by the examiner that this particular argument is provided in the discussion of **claim 1** in view of the prior art by the applicant.

However, it is noted by the examiner that the rejection of **claim 3** is based upon a standard of obviousness, rather than anticipation. The examiner maintains that it would be obvious to one of ordinary skill in the art in view of the cited references- Dejaco (US Patent 6,260,990), Cho (US Patent 6,208,958) and Arslan- to transcode between CELP-type formats using bandwidth correction as applied in the previous Office Action, and further that it would be obvious to compress bandwidth in the instance where the input CELP-type codec was of wider bandwidth than the output CELP-type codec (and vice versa) because that is what is required to maintain data fidelity when transcoding between *any* two codecs of different bandwidths. While it is possible that one of ordinary skill in the art may have sufficient reason *not* to maintain data fidelity, unless otherwise explicitly disclosed, the primary goal of transcoding is to maintain data fidelity, and therefore the examiner contends that the most obvious goal in any transcoder would be to match the bandwidths between codecs.

Regarding **claim 6**, the applicant argues that Koa (US Patent 5,371,853) does not cure the deficiency of Dejaco and Cho as applied in the previous Office Action to **claim 6**.

However, the applicant provides no further reasoning regarding why the combined teachings of Dejaco, Cho and Koa are insufficient in rendering obvious the teachings of **claim 6** despite the examiner's previous explanations regarding why such a combination would be appropriate to render obvious the limitations of **claim 6** for one of ordinary skill in the art at the time the invention was made.

However, it is further noted that **claim 6** is dependent upon amended **claim 1**, and therefore these arguments are moot. Appropriate rejections will be included below in the relevant sections of this Office Action.

Claim Objections

5. **Claim 3** is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Specifically, **claim 3** is dependent upon independent **claim 1**, and only provides the additional limitation of, "wherein the formant bandwidth converting means also compresses the bandwidth of the formant parameters and generates the bandwidth-corrected formant parameters when the bandwidth of the input CELP format is wider than that of the output CELP format." It is noted by the examiner that this limitation, verbatim, is included as the entire amendment to independent **claim 1** as filed 02/21/2008 by the applicant. Therefore, **claim 3** provides no further limitation to independent **claim 1**.

6. **Claim 1** is objected to because of the following informalities:

- The limitation in lines 20-21 of **claim 1** should instead read, "an
excitation parameter translating means for translating
excitation parameters from input CELP format to output
CELP format and generating excitation [e0. xcitation]
parameters in an output CELP format;"

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 1-5 and 8-9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Dejaco in view of Cho and in further view of Arslan.

Regarding **claim 1**, Dejaco discloses an apparatus for trans-coding between CELP type codecs having different bandwidths, comprising:

- A first type converting means for receiving formant
parameters from the input bit stream and converting
formant parameters from the type specified in the

input CELP format to a suitable type for a formant bandwidth conversion (Fig. 6, item 610A; Fig. 7, item 702);

- a formant parameter translating means for translating formant parameters from input CELP format to output CELP format and generating formant parameters in an output CELP format (Fig. 5, item 502; Fig. 7, item 702; Col. 2, lines 45-49; Col. 7, lines 16-19);
- a formant parameter quantizing means for receiving the translated formant parameters and quantizing the translated formant parameters (Fig. 5, item 506; Fig. 7, item 712; Col. 2, lines 45-49; Col. 6, lines 55-57; Col. 7, lines 16-19);
- an excitation parameter translating means for translating excitation parameters from input CELP format to output CELP format and generating excitation parameters in an output CELP format (Fig. 6, item 630; Col. 2, lines 49-53; Col. 6, lines 04-08); and
- an excitation quantizing means for receiving the translated excitation parameters and quantizing the translated excitation parameters (Fig. 5, item 506; Col. 6, lines 60-62).

Dejaco does not adequately disclose that the formant parameter translating means includes a formant bandwidth converting means.

Cho discloses a pitch determination apparatus that includes a formant bandwidth conversion [extension] unit (Fig. 2, element 210; Col. 1, line 61 – Col. 2, line 05; Col. 2, lines 63-65) for the purposes of extending formant bandwidth.

Dejaco in view of Cho does not adequately disclose the bandwidth converting means for compressing formant bandwidth.

Arslan discloses formant bandwidth compression [reduction] by direct adjustment of line spectral frequencies (Col. 9, lines 01-03) for the use in transcoding (“transforming a source signal into a target signal”; Claim 1).

The references are combinable because each deals with a method of speech encoding and processing. Cho provides motivation to combine in disclosing the utility of formant bandwidth extension in reducing the influence of a first formant, thus yielding a more accurate analysis (Col. 1, line 62).

Arslan further provides motivation in disclosing the usefulness of compression of formant bandwidth to remove audible buzz artifacts caused by overly-expanded formant bandwidths (Col. 8, lines 58-61).

Therefore, the examiner contends that it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the teachings of Dejaco in view of Cho using the teachings of Arslan to implement an apparatus for trans-coding between CELP type codecs including a formant bandwidth compression.

Regarding **claim 2**, Dejaco in view of Cho and in further view of Arslan discloses all limitations of **claim 1** as applied above and Dejaco further discloses:

- a formant model order converting means for receiving the input formant parameters from the second type converting means and converting the formant parameters from the model order in the input CELP format into the model order in the output CELP format (Fig. 7, item 704; Fig. 6, item 602);
- a third type converting means for receiving the order-corrected formant parameters from the formant model order converting means and converting the formant parameters from the type used in the model order converting means to a suitable type for frame rate conversion (Fig. 6; item 610B);
- a formant frame rate converting means for receiving the input formant parameters from the third type converting means and converting the formant parameters from the frame rate in the input CELP format to the frame rate in the output CELP format (Fig. 7, item 708); and
- a fourth type converting means for receiving the frame rate-corrected formant parameters from the formant frame rate converting means and converting the formant parameters from the type used in the formant frame rate converting means to a suitable type for the

formant parameter quantizing means in the output CELP
format (Fig. 6, item 610C).

Though Dejaco in view of Cho and in further view of Arslan does not explicitly disclose a second type converting means for bandwidth-conversion, this limitation is inherently required of any system that permits transcoding between codecs of different bandwidths as is made obvious by Dejaco in view of Cho, and in further view of Arslan.

Regarding **claim 3**, this claim is identical to **claim 1** as noted above, and is rejected for the same reasons.

Regarding **claim 4**, Dejaco in view of Cho and in further view of Arslan discloses all limitations of **claim 2** as applied above, and Dejaco further discloses the use of truncation and extension for model order correction (Col. 7, lines 30-41).

Regarding **claim 5**, Dejaco in view of Cho and in further view of Arslan discloses all limitations of **claim 2** as applied above, and Dejaco further discloses the use of interpolation and decimation for adjusting frame rates (Col. 7, line 63 – Col. 8, line 08).

Regarding **claim 8**, this claim is very similar to **claim 1**, and is rejected for the same reasons.

Regarding **claim 9**, this claim is very similar to **claim 1**, and is rejected for the same reasons.

8. **Claims 6-7** are rejected under 35 U.S.C. 103(a) as being unpatentable over Dejaco in view of Cho, in further view of Arslan, and in further view of Koa.

Regarding **claim 6**, Dejaco in view of Cho, and in further view of Arslan discloses all limitations of **claim 2** as applied above, and Dejaco additionally discloses an excitation parameter translator that includes an excitation synthesizing means (Fig. 6, item 606; Col. 8, lines 25-31) and a codebook searcher (Fig. 6, item 608; Col. 7, lines 07-08; Col. 8, lines 32-34).

Cho discloses a pitch determination apparatus that includes a formant bandwidth conversion [extension] unit (Fig. 2, element 210; Col. 1, line 61 – Col. 2, line 05; Col. 2, lines 63-65) for the purposes of extending formant bandwidth.

Arslan discloses bandwidth compression as applied above, but does not adequately disclose bandwidth expansion.

Dejaco in view of Cho and in further view of Arslan does not adequately disclose a separation of adaptive and fixed codebooks, a perceptual weighting filter before the codebook searching means.

Koa discloses a CELP vocoder that includes both an adaptive and fixed codebook (Fig. 4; Col. 5, lines 42-59), and also perceptual weighting filters before codebook searching (Fig. 4, items 66-68; Col. 5, line 69 – Col. 6, line 09).

These references are combinable because each is directed to a method of speech data analysis and also to encoding speech. Further, Cho provides motivation to combine in disclosing the utility of formant bandwidth extension in reducing the influence of a first formant, thus yielding a more accurate analysis (Col. 1, line 62).

Arslan further provides motivation in disclosing the usefulness of compression of formant bandwidth to remove audible buzz artifacts caused by overly-expanded formant bandwidths (Col. 8, lines 58-61).

Koa provides further motivation in disclosing the need for reduced complexity of processing the excitation parameters of a CELP-type codec (Col. 3, lines 42-45).

Therefore, the examiner contends that it would be obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Dejaco in view of Cho to implement an apparatus for trans-coding between CELP type codecs including a formant bandwidth conversion device used for reducing the influence of a first formant in speech data, and to further use the teachings of Arslan to remove audible buzz artifacts caused by overly-expanded formant bandwidths, and to further still use the teachings of Koa to reduce the complexity of processing the excitation parameters of a CELP-type codec.

Regarding **claim 7**, Dejaco in view of Cho, in further view of Arslan and in further view of Koa teaches all limitations of **claim 6** as applied above, and Arslan discloses the reduction of formant bandwidth by direct adjustment of line spectral frequencies, including a decimation method (use of "bandwidth adjustment ratio"; Col. 9, lines 06-

15). Because the decimation is achieved using a bandwidth adjustment ratio, it would be obvious to adjust the ratio to achieve an interpolation [expansion] of formant bandwidth. Further, Arslan specifically discloses that excitation parameters can be transformed in the same manner as formant parameters (Col. 10, lines 18-21).

This limitation is directly related to the teachings of Arslan as applied above to **claim 6**, and therefore the motivation to combine the references is the same for **claim 7** as applied above to **claim 6**.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID KOVACEK whose telephone number is (571)270-3135. The examiner can normally be reached on M-F 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2626

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Talivaldis Ivars Smits/
Primary Examiner, Art Unit 2626

DMK 04/08/2008